DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : MATHS**
Date : **DPP No. : 2**

Topic :- STRAIGHT LINES

1. If PM is the perpendicular from $P(2,3)$ onto the line $x+y=3$, then the coordinates of M are
   a) $(2,1)$ b) $(-1,4)$ c) $(1,2)$ d) $(4,-1)$
2. A line through the point $A(2,0)$ which makes an angle of $30°$ with the positive direction of x-axis is rotated about A in clockwise direction through an angle of $15°$. Then, the equation of the straight line in the new position is
   a) $\left(2-\sqrt{3}\right)x+y-4+2\sqrt{3}=0$ b) $\left(2-\sqrt{3}\right)x-y-4+2\sqrt{3}=0$
   c) $\left(2-\sqrt{3}\right)x-y+4+2\sqrt{3}=0$ d) $\left(2-\sqrt{3}\right)x+y+4+2\sqrt{3}=0$
3. The distance between the pair of parallel lines $x^2+2xy+y^2-8ax-8ay-9a^2=0$ is
   a) $2\sqrt{5}a$ b) $\sqrt{10}a$ c) $10\,a$ d) $5\sqrt{2}a$
4. One vertex of the equilateral triangle with centroid at the origin and one side as $x+y-2=0$ is
   a) $(-1,-1)$ b) $(2,2)$ c) $(-2,-2)$ d) None of these
5. The equation of straight line through the intersection of the lines $x-2y=1$ and $x+3y=2$ and parallel to $3x+4y=0$, is
   a) $3x+4y+5=0$ b) $3x+4y-10=0$ c) $3x+4y-5=0$ d) $3x+4y+6=0$
6. The straight line $3x+y=9$ divided the line segment joining the points $(1,3)$ and $(2,7)$ in the ratio
   a) 3:4 externally b) 3:4 internally c) 4:5 internally d) 5:6 externally
7. Orthocentre of the triangle whose sides are given by $4x-7y+10=0, x+y-5=0$ and $7x+4y-15=0$ is
   a) $(-1,-2)$ b) $(1,-2)$ c) $(-1,2)$ d) $(1,2)$
8. The diagonals of the parallelogram whose sides are $lx+my+n=0, lx+my+n'=0, mx+ly+n=0, mx+ly+n'=0$ include an angle
   a) $\pi/3$ b) $\pi/2$ c) $\tan^{-1}\left(\frac{l^2-m^2}{l^2+m^2}\right)$ d) $\tan^{-1}\left(\frac{2\,lm}{l^2+m^2}\right)$
9. The centroid of an equilateral triangle is $(0,0)$. If two vertices of the triangle lie on $x+y=2\sqrt{2}$, then one of them will have its coordinates
   a) $(\sqrt{2}+\sqrt{6},\sqrt{2}-\sqrt{6})$ b) $(\sqrt{2}+\sqrt{3},\sqrt{2}-\sqrt{3})$ c) $(\sqrt{2}+\sqrt{5},\sqrt{2}-\sqrt{5})$ d) None of theses
10. If the lines $ax+2y+1=0, bx+3y+1=0, cx+4y+1=0$ are concurrent, then a, b, c are in
    a) AP b) GP c) HP d) None of these
11. Locus of the centroid of triangle whose vertices are $(a\cos t, a\sin t), (b\sin t, -b\cos t)$ and $(1,0)$, where t is a parameter, is
    a) $(3x-1)^2+(3y)^2=a^2-b^2$
    b) $(3x-1)^2+(3y)^2=a^2+b^2$
    c) $(3x+1)^2+(3y)^2=a^2+b^2$
    d) $(3x+1)^2+(3y)^2=a^2-b^2$
12. If θ is the acute angle between the lines given by $6x^2+5xy-7x+13y-3=0$, then the equation of the line passing through the point of intersection of these lines and making angle θ with the positive x-axis is
    a) $2x+11y+13=0$ b) $11x-2y+13=0$ c) $2x-11y+2=0$ d) $11x+2y-11=0$
13. If $\frac{x^2}{a}+\frac{y^2}{b}+\frac{2xy}{h}=0$ represents a pair of straight lines such that slope of one line is twice the other, then

$ab : h^2$ is

a) $9 : 8$ b) $8 : 9$ c) $1 : 2$ d) $2 : 1$

14. The lines bisecting the angle between the bisectors of the angles between the lines $ax^2 + 2hxy + by^2 = 0$ are given by

a) $(a-b)(x^2-y^2) - 4\,hxy = 0$

b) $(a-b)(x^2+y^2) + 4hxy = 0$

c) $(a-b)(x^2-y^2) + 4\,hxy = 0$

d) None of these

15. The line passing through $\left(-1, \frac{\pi}{2}\right)$ and perpendicular to $\sqrt{3}\sin\theta + 2\cos\theta = \frac{4}{r}$ is

a) $2 = \sqrt{3}r\cos\theta - 2r\sin\theta$ b) $5 = -2\sqrt{3}r\sin\theta + 4r\cos\theta$

c) $2 = \sqrt{3}r\cos\theta + 2r\sin\theta$ d) $5 = 2\sqrt{3}r\sin\theta + 4r\cos\theta$

16. Given a family of lines $a(2x + y + 4) + b(x - 2y - 3) = 0$, the number of lines belonging to the family at a distance $\sqrt{10}$ from $P(2, -3)$ is

a) 0 b) 1 c) 2 d) 4

17. Let the perpendiculars from any point on the line $2x + 11y = 5$ upon the lines $24x + 7y - 20 = 0$ and $4x - 3y - 2 = 0$ have the lengths p_1 and p_2 respectively. Then,

a) $2p_1 = p_2$ b) $p_1 = p_2$ c) $p_1 = 2p_2$ d) None of these

18. The equation of bisectors of the angles between the lines $|x| = |y|$ are

a) $y = \pm x$ and $x = 0$ b) $x = \frac{1}{2}$ and $y = \frac{1}{2}$ c) $y = 0$ and $x = 0$ d) None of these

19. The pairs of straight lines $x^2 - 3xy + 2y^2 = 0$ and $x^2 - 3xy + 2y^2 + x - 2 = 0$ form a

a) Square but not rhombus b) Rhombus

c) Parallelogram d) Rectangle but not a square

20. The straight line whose sum of the intercepts on the axes is equal to half to the product of the intercepts, passes through the point whose coordinates are

a) (1, 1) b) (2, 2) c) (3, 3) d) (4, 4)